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Grimaldi, J.Christopher  
Gurney, Austin  
Li, Hanzhong  
Hillan, Kenneth J.  
Hymowitz, Sarah  
Tumas, Daniel  
Starovasnik, Melissa.  
VanLookeren, Menno  
Vandlen, Richard  
Watanabe, Colin  
Williams, P.Mickey  
Wood, William  
Yansura, Daniel

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 65 70 75  
 Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val  
 80 85 90  
 Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser  
 95 100 105  
 Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr  
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80 85 90  
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Tyr His Ala Arg Cys Leu Cys Pro His Cys Val Ser Leu Gln Thr  
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50 55 60  
Gly Pro Arg Glu Gln Ala Arg Asn Ala Ser Cys Pro Ala Gly Gly  
65 70 75  
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Val Ser Pro Trp Ala Tyr Arg Ile Ser Tyr Asp Pro Ala Arg Tyr  
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Pro Arg Tyr Leu Pro Glu Ala Tyr Cys Leu Cys Arg Gly Cys Leu  
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Phe Ser Tyr Ile Gly Phe Pro Val Glu Leu Asn Thr Val Tyr Phe  
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 Ile Gly Ala His Asn Ile Pro Asn Ala Asn Met Asn Glu Asp Gly  
                     140                    145                    150  
 Pro Ser Met Ser Val Asn Phe Thr Ser Pro Gly Cys Leu Asp His  
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 Ile Met Lys Tyr Lys Lys Lys Cys Val Lys Ala Gly Ser Leu Trp  
                     170                    175                    180  
 Asp Pro Asn Ile Thr Ala Cys Lys Lys Asn Glu Glu Thr Val Glu  
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 Val Asn Phe Thr Thr Thr Pro Leu Gly Asn Arg Tyr Met Ala Leu  
                     200                    205                    210  
 Ile Gln His Ser Thr Ile Ile Gly Phe Ser Gln Val Phe Glu Pro  
                     215                    220                    225

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His	Gln	Lys	Lys	Gln	Thr	Arg	Ala	Ser	Val	Val	Ile	Pro	Val	Thr	
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Gly	Asp	Ser	Glu	Gly	Ala	Thr	Val	Gln	Leu	Thr	Pro	Tyr	Phe	Pro	
				245					250					255	
Thr	Cys	Gly	Ser	Asp	Cys	Ile	Arg	His	Lys	Gly	Thr	Val	Val	Leu	
				260					265					270	
Cys	Pro	Gln	Thr	Gly	Val	Pro	Phe	Pro	Leu	Asp	Asn	Asn	Lys	Ser	
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Lys	Pro	Gly	Gly	Trp	Leu	Pro	Leu	Leu	Leu	Leu	Ser	Leu	Leu	Val	
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Ala	Thr	Trp	Val	Leu	Val	Ala	Gly	Ile	Tyr	Leu	Met	Trp	Arg	His	
				305					310					315	
Glu	Arg	Ile	Lys	Lys	Thr	Ser	Phe	Ser	Thr	Thr	Thr	Leu	Leu	Pro	
				320					325					330	
Pro	Ile	Lys	Val	Leu	Val	Val	Tyr	Pro	Ser	Glu	Ile	Cys	Phe	His	
				335					340					345	
His	Thr	Ile	Cys	Tyr	Phe	Thr	Glu	Phe	Leu	Gln	Asn	His	Cys	Arg	
				350					355					360	
Ser	Glu	Val	Ile	Leu	Glu	Lys	Trp	Gln	Lys	Lys	Lys	Ile	Ala	Glu	
				365					370					375	
Met	Gly	Pro	Val	Gln	Trp	Leu	Ala	Thr	Gln	Lys	Lys	Ala	Ala	Asp	
				380					385					390	
Lys	Val	Val	Phe	Leu	Leu	Ser	Asn	Asp	Val	Asn	Ser	Val	Cys	Asp	
				395					400					405	
Gly	Thr	Cys	Gly	Lys	Ser	Glu	Gly	Ser	Pro	Ser	Glu	Asn	Ser	Gln	
				410					415					420	
Asp	Leu	Phe	Pro	Leu	Ala	Phe	Asn	Leu	Phe	Cys	Ser	Asp	Leu	Arg	
				425					430					435	
Ser	Gln	Ile	His	Leu	His	Lys	Tyr	Val	Val	Val	Tyr	Phe	Arg	Glu	
				440					445					450	
Ile	Asp	Thr	Lys	Asp	Asp	Tyr	Asn	Ala	Leu	Ser	Val	Cys	Pro	Lys	
				455					460					465	
Tyr	His	Leu	Met	Lys	Asp	Ala	Thr	Ala	Phe	Cys	Ala	Glu	Leu	Leu	
				470					475					480	
His	Val	Lys	Gln	Gln	Val	Ser	Ala	Gly	Lys	Arg	Ser	Gln	Ala	Cys	
				485					490					495	
His	Asp	Gly	Cys	Cys	Ser	Leu									
				500											

<210> 13

<211> 2380  
<212> DNA  
<213> Homo Sapien

<400> 13

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cacgggctga ctgggggtgc tgccccctt gggggggggc agcacagggc 200
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 ccgcgttccg ggcggtcca agagagagcg gagcaagtgt cccgggccct 2250  
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 <212> PRT  
 <213> Homo Sapien

<400> 14  
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 Thr His Cys Ser Pro Gly Leu Ser Cys Arg Leu Trp Asp Ser Asp  
 35 40 45  
 Ile Leu Cys Leu Pro Gly Asp Ile Val Pro Ala Pro Gly Pro Val



50	55	60
Leu Ala Pro Thr His	Leu Gln Thr Glu Leu Val Leu Arg Cys Gln	
65	70	75
Lys Glu Thr Asp Cys	Asp Leu Cys Leu Arg Val Ala Val His Leu	
80	85	90
Ala Val His Gly His	Trp Glu Glu Pro Glu Asp Glu Glu Lys Phe	
95	100	105
Gly Gly Ala Ala Asp	Ser Gly Val Glu Glu Pro Arg Asn Ala Ser	
110	115	120
Leu Gln Ala Gln Val	Val Leu Ser Phe Gln Ala Tyr Pro Thr Ala	
125	130	135
Arg Cys Val Leu Leu	Glu Val Gln Val Pro Ala Ala Leu Val Gln	
140	145	150
Phe Gly Gln Ser Val	Gly Ser Val Val Tyr Asp Cys Phe Glu Ala	
155	160	165
Ala Leu Gly Ser Glu	Val Arg Ile Trp Ser Tyr Thr Gln Pro Arg	
170	175	180
Tyr Glu Lys Glu Leu	Asn His Thr Gln Gln Leu Pro Ala Leu Pro	
185	190	195
Trp Leu Asn Val Ser	Ala Asp Gly Asp Asn Val His Leu Val Leu	
200	205	210
Asn Val Ser Glu Glu	Gln His Phe Gly Leu Ser Leu Tyr Trp Asn	
215	220	225
Gln Val Gln Gly Pro	Pro Lys Pro Arg Trp His Lys Asn Leu Thr	
230	235	240
Gly Pro Gln Ile Ile	Thr Leu Asn His Thr Asp Leu Val Pro Cys	
245	250	255
Leu Cys Ile Gln Val	Trp Pro Leu Glu Pro Asp Ser Val Arg Thr	
260	265	270
Asn Ile Cys Pro Phe	Arg Glu Asp Pro Arg Ala His Gln Asn Leu	
275	280	285
Trp Gln Ala Ala Arg	Leu Arg Leu Leu Thr Leu Gln Ser Trp Leu	
290	295	300
Leu Asp Ala Pro Cys	Ser Leu Pro Ala Glu Ala Ala Leu Cys Trp	
305	310	315
Arg Ala Pro Gly Gly	Asp Pro Cys Gln Pro Leu Val Pro Pro Leu	
320	325	330
Ser Trp Glu Asn Val	Thr Val Asp Lys Val Leu Glu Phe Pro Leu	
335	340	345

Leu Lys Gly His	Pro Asn Leu Cys Val	Gln Val Asn Ser Ser	Glu
350		355	360
Lys Leu Gln Leu	Gln Glu Cys Leu Trp	Ala Asp Ser Leu Gly	Pro
365		370	375
Leu Lys Asp Asp	Val Leu Leu Leu Glu	Thr Arg Gly Pro Gln	Asp
380		385	390
Asn Arg Ser Leu	Cys Ala Leu Glu Pro	Ser Gly Cys Thr Ser	Leu
395		400	405
Pro Ser Lys Ala	Ser Thr Arg Ala Ala	Arg Leu Gly Glu Tyr	Leu
410		415	420
Leu Gln Asp Leu	Gln Ser Gly Gln Cys	Leu Gln Leu Trp Asp	Asp
425		430	435
Asp Leu Gly Ala	Leu Trp Ala Cys Pro	Met Asp Lys Tyr Ile	His
440		445	450
Lys Arg Trp Ala	Leu Val Trp Leu Ala	Cys Leu Leu Phe Ala	Ala
455		460	465
Ala Leu Ser Leu	Ile Leu Leu Leu Lys	Lys Asp His Ala Lys	Gly
470		475	480
Trp Leu Arg Leu	Leu Lys Gln Asp Val	Arg Ser Gly Ala Ala	Ala
485		490	495
Arg Gly Arg Ala	Ala Leu Leu Leu Tyr	Ser Ala Asp Asp Ser	Gly
500		505	510
Phe Glu Arg Leu	Val Gly Ala Leu Ala	Ser Ala Leu Cys Gln	Leu
515		520	525
Pro Leu Arg Val	Ala Val Asp Leu Trp	Ser Arg Arg Glu Leu	Ser
530		535	540
Ala Gln Gly Pro	Val Ala Trp Phe His	Ala Gln Arg Arg Gln	Thr
545		550	555
Leu Gln Glu Gly	Gly Val Val Val Leu	Leu Phe Ser Pro Gly	Ala
560		565	570
Val Ala Leu Cys	Ser Glu Trp Leu Gln	Asp Gly Val Ser Gly	Pro
575		580	585
Gly Ala His Gly	Pro His Asp Ala Phe	Arg Ala Ser Leu Ser	Cys
590		595	600
Val Leu Pro Asp	Phe Leu Gln Gly Arg	Ala Pro Gly Ser Tyr	Val
605		610	615
Gly Ala Cys Phe	Asp Arg Leu Leu His	Pro Asp Ala Val Pro	Ala
620		625	630
Leu Phe Arg Thr	Val Pro Val Phe Thr	Leu Pro Ser Gln Leu	Pro

635	640	645
Asp Phe Leu Gly Ala Leu Gln Gln Pro Arg Ala Pro Arg Ser Gly		
650	655	660
Arg Leu Gln Glu Arg Ala Glu Gln Val Ser Arg Ala Leu Gln Pro		
665	670	675
Ala Leu Asp Ser Tyr Phe His Pro Pro Gly Thr Pro Ala Pro Gly		
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Arg Gly Val Gly Pro Gly Ala Gly Pro Gly Ala Gly Asp Gly Thr		
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 <211> 2138  
 <212> DNA  
 <213> Homo Sapien

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 <212> PRT  
 <213> Homo Sapien

<400> 16  
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Ile Val Ile Asp Leu Ser Asp Ser Ala Gly Ile Gly Phe Arg His

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Leu Pro His Trp Asn Thr Arg Cys Pro Leu Ala Ser His Thr Asp	35	40	45
Asp Ser Phe Thr Gly Ser Ser Ala Tyr Ile Pro Cys Arg Thr Trp	50	55	60
Trp Ala Leu Phe Ser Thr Lys Pro Trp Cys Val Arg Val Trp His	65	70	75
Cys Ser Arg Cys Leu Cys Gln His Leu Leu Ser Gly Gly Ser Gly	80	85	90
Leu Gln Arg Gly Leu Phe His Leu Leu Val Gln Lys Ser Lys Lys	95	100	105
Ser Ser Thr Phe Lys Phe Tyr Arg Arg His Lys Met Pro Ala Pro	110	115	120
Ala Gln Arg Lys Leu Leu Pro Arg Arg His Leu Ser Glu Lys Ser	125	130	135
His His Ile Ser Ile Pro Ser Pro Asp Ile Ser His Lys Gly Leu	140	145	150
Arg Ser Lys Arg Thr Gln Pro Ser Asp Pro Glu Thr Trp Glu Ser	155	160	165
Leu Pro Arg Leu Asp Ser Gln Arg His Gly Gly Pro Glu Phe Ser	170	175	180
Phe Asp Leu Leu Pro Glu Ala Arg Ala Ile Arg Val Thr Ile Ser	185	190	195
Ser Gly Pro Glu Val Ser Val Arg Leu Cys His Gln Trp Ala Leu	200	205	210
Glu Cys Glu Glu Leu Ser Ser Pro Tyr Asp Val Gln Lys Ile Val	215	220	225
Ser Gly Gly His Thr Val Glu Leu Pro Tyr Glu Phe Leu Leu Pro	230	235	240
Cys Leu Cys Ile Glu Ala Ser Tyr Leu Gln Glu Asp Thr Val Arg	245	250	255
Arg Lys Lys Cys Pro Phe Gln Ser Trp Pro Glu Ala Tyr Gly Ser	260	265	270
Asp Phe Trp Lys Ser Val His Phe Thr Asp Tyr Ser Gln His Thr	275	280	285
Gln Met Val Met Ala Leu Thr Leu Arg Cys Pro Leu Lys Leu Glu	290	295	300
Ala Ala Leu Cys Gln Arg His Asp Trp His Thr Leu Cys Lys Asp	305	310	315

Leu Pro Asn Ala Thr Ala Arg Glu Ser Asp Gly Trp Tyr Val Leu	320	325	330
Glu Lys Val Asp Leu His Pro Gln Leu Cys Phe Lys Phe Ser Phe	335	340	345
Gly Asn Ser Ser His Val Glu Cys Pro His Gln Thr Gly Ser Leu	350	355	360
Thr Ser Trp Asn Val Ser Met Asp Thr Gln Ala Gln Gln Leu Ile	365	370	375
Leu His Phe Ser Ser Arg Met His Ala Thr Phe Ser Ala Ala Trp	380	385	390
Ser Leu Pro Gly Leu Gly Gln Asp Thr Leu Val Pro Pro Val Tyr	395	400	405
Thr Val Ser Gln Ala Arg Gly Ser Ser Pro Val Ser Leu Asp Leu	410	415	420
Ile Ile Pro Phe Leu Arg Pro Gly Cys Cys Val Leu Val Trp Arg	425	430	435
Ser Asp Val Gln Phe Ala Trp Lys His Leu Leu Cys Pro Asp Val	440	445	450
Ser Tyr Arg His Leu Gly Leu Leu Ile Leu Ala Leu Leu Ala Leu	455	460	465
Leu Thr Leu Leu Gly Val Val Leu Ala Leu Thr Cys Arg Arg Pro	470	475	480
Gln Ser Gly Pro Gly Pro Ala Arg Pro Val Leu Leu Leu His Ala	485	490	495
Ala Asp Ser Glu Ala Gln Arg Arg Leu Val Gly Ala Leu Ala Glu	500	505	510
Leu Leu Arg Ala Ala Leu Gly Gly Gly Arg Asp Val Ile Val Asp	515	520	525
Leu Trp Glu Gly Arg His Val Ala Arg Val Gly Pro Leu Pro Trp	530	535	540
Leu Trp Ala Ala Arg Thr Arg Val Ala Arg Glu Gln Gly Thr Val	545	550	555
Leu Leu Leu Trp Ser Gly Ala Asp Leu Arg Pro Val Ser Gly Pro	560	565	570
Asp Pro Arg Ala Ala Pro Leu Leu Ala Leu Leu His Ala Ala Pro	575	580	585
Arg Pro Leu Leu Leu Leu Ala Tyr Phe Ser Arg Leu Cys Ala Lys	590	595	600
Gly Asp Ile Pro Pro Pro Leu Arg Ala Leu Pro Arg Tyr Arg Leu			

605	610	615
Leu Arg Asp Leu Pro Arg Leu Leu Arg	Ala Leu Asp Ala Arg Pro	
620	625	630
Phe Ala Glu Ala Thr Ser Trp Gly Arg	Leu Gly Ala Arg Gln Arg	
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Arg Gln Ser Arg Leu Glu Leu Cys Ser	Arg Leu Glu Arg Glu Ala	
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Ala Arg Leu Ala Asp Leu Gly		
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<400> 17  
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 gggctgtaca acatcacctt caaatatgac aattgtacca cctacttgaa 200  
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 gccctcggca tcgaattcct gaaaggattt cgggtaatac tggaggagct 350  
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 gagtcttcca catacactgc agcactccca agagagaggc tccggccgcg 1100  
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 gttccaaagg tatgaagtac tttgtggaca agaagaacta caaacacaaa 1350  
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<210> 18

<211> 728



<212> PRT  
<213> Homo Sapien

<400> 18

Met	Pro	Arg	Ala	Ser	Ala	Ser	Gly	Val	Pro	Ala	Leu	Phe	Val	Ser	1	5	10	15
Gly	Glu	Gln	Gly	Val	Gly	Pro	Ala	Ser	Arg	Asn	Ser	Gly	Leu	Tyr	20	25	30	
Asn	Ile	Thr	Phe	Lys	Tyr	Asp	Asn	Cys	Thr	Thr	Tyr	Leu	Asn	Pro	35	40	45	
Val	Gly	Lys	His	Val	Ile	Ala	Asp	Ala	Gln	Asn	Ile	Thr	Ile	Ser	50	55	60	
Gln	Tyr	Ala	Cys	His	Asp	Gln	Val	Ala	Val	Thr	Ile	Leu	Trp	Ser	65	70	75	
Pro	Gly	Ala	Leu	Gly	Ile	Glu	Phe	Leu	Lys	Gly	Phe	Arg	Val	Ile	80	85	90	
Leu	Glu	Glu	Leu	Lys	Ser	Glu	Gly	Arg	Gln	Cys	Gln	Gln	Leu	Ile	95	100	105	
Leu	Lys	Asp	Pro	Lys	Gln	Leu	Asn	Ser	Ser	Phe	Lys	Arg	Thr	Gly	110	115	120	
Met	Glu	Ser	Gln	Pro	Phe	Leu	Asn	Met	Lys	Phe	Glu	Thr	Asp	Tyr	125	130	135	
Phe	Val	Lys	Val	Val	Pro	Phe	Pro	Ser	Ile	Lys	Asn	Glu	Ser	Asn	140	145	150	
Tyr	His	Pro	Phe	Phe	Phe	Arg	Thr	Arg	Ala	Cys	Asp	Leu	Leu	Leu	155	160	165	
Gln	Pro	Asp	Asn	Leu	Ala	Cys	Lys	Pro	Phe	Trp	Lys	Pro	Arg	Asn	170	175	180	
Leu	Asn	Ile	Ser	Gln	His	Gly	Ser	Asp	Met	Gln	Val	Ser	Phe	Asp	185	190	195	
His	Ala	Pro	His	Gly	Ser	Asp	Met	Gln	Val	Ser	Phe	Asp	His	Ala	200	205	210	
Pro	His	Asn	Phe	Gly	Phe	Arg	Phe	Phe	Tyr	Leu	His	Tyr	Lys	Leu	215	220	225	
Lys	His	Glu	Gly	Pro	Phe	Lys	Arg	Lys	Thr	Cys	Lys	Gln	Glu	Gln	230	235	240	
Thr	Thr	Glu	Met	Thr	Ser	Cys	Leu	Leu	Gln	Asn	Val	Ser	Pro	Gly	245	250	255	
Asp	Tyr	Ile	Ile	Glu	Leu	Val	Asp	Asp	Thr	Asn	Thr	Thr	Arg	Lys	260	265	270	

Val Met His Tyr	Ala Leu Lys Pro Val	His Ser Pro Trp Ala Gly	275	280	285
Pro Ile Arg Ala	Val Ala Ile Thr Val	Pro Leu Val Val Ile Ser	290	295	300
Ala Phe Ala Thr	Leu Phe Thr Val Met	Cys Arg Lys Lys Gln Gln	305	310	315
Glu Asn Ile Tyr	Ser His Leu Asp Glu	Glu Ser Ser Glu Ser Ser	320	325	330
Thr Tyr Thr Ala	Ala Leu Pro Arg Glu	Arg Leu Arg Pro Arg Pro	335	340	345
Lys Val Phe Leu	Cys Tyr Ser Ser Lys	Asp Gly Gln Asn His Met	350	355	360
Asn Val Val Gln	Cys Phe Ala Tyr Phe	Leu Gln Asp Phe Cys Gly	365	370	375
Cys Glu Val Ala	Leu Asp Leu Trp Glu	Asp Phe Ser Leu Cys Arg	380	385	390
Glu Gly Gln Arg	Glu Trp Val Ile Gln	Lys Ile His Glu Ser Gln	395	400	405
Phe Ile Ile Val	Val Cys Ser Lys Gly	Met Lys Tyr Phe Val Asp	410	415	420
Lys Lys Asn Tyr	Lys His Lys Gly Gly	Gly Arg Gly Ser Gly Lys	425	430	435
Gly Glu Leu Phe	Leu Val Ala Val Ser	Ala Ile Ala Glu Lys Leu	440	445	450
Arg Gln Ala Lys	Gln Ser Ser Ser Ala	Ala Leu Ser Lys Phe Ile	455	460	465
Ala Val Tyr Phe	Asp Tyr Ser Cys Glu	Gly Asp Val Pro Gly Ile	470	475	480
Leu Asp Leu Ser	Thr Lys Tyr Arg Leu	Met Asp Asn Leu Pro Gln	485	490	495
Leu Cys Ser His	Leu His Ser Arg Asp	His Gly Leu Gln Glu Pro	500	505	510
Gly Gln His Thr	Arg Gln Gly Ser Arg	Arg Asn Tyr Phe Arg Ser	515	520	525
Lys Ser Gly Arg	Ser Leu Tyr Val Ala	Ile Cys Asn Met His Gln	530	535	540
Phe Ile Asp Glu	Glu Pro Asp Trp Phe	Glu Lys Gln Phe Val Pro	545	550	555
Phe His Pro Pro	Pro Leu Arg Tyr Arg	Glu Pro Val Leu Glu Lys			

560	565	570
Phe Asp Ser Gly Leu Val Leu Asn Asp	Val Met Cys Lys Pro Gly	
575	580	585
Pro Glu Ser Asp Phe Cys Leu Lys Val	Glu Ala Ala Val Leu Gly	
590	595	600
Ala Thr Gly Pro Ala Asp Ser Gln His	Glu Ser Gln His Gly Gly	
605	610	615
Leu Asp Gln Asp Gly Glu Ala Arg Pro	Ala Leu Asp Gly Ser Ala	
620	625	630
Ala Leu Gln Pro Leu Leu His Thr Val	Lys Ala Gly Ser Pro Ser	
635	640	645
Asp Met Pro Arg Asp Ser Gly Ile Tyr	Asp Ser Ser Val Pro Ser	
650	655	660
Ser Glu Leu Ser Leu Pro Leu Met Glu	Gly Leu Ser Thr Asp Gln	
665	670	675
Thr Glu Thr Ser Ser Leu Thr Glu Ser	Val Ser Ser Ser Ser Gly	
680	685	690
Leu Gly Glu Glu Glu Pro Pro Ala Leu	Pro Ser Lys Leu Leu Ser	
695	700	705
Ser Gly Ser Cys Lys Ala Asp Leu Gly	Cys Arg Ser Tyr Thr Asp	
710	715	720
Glu Leu His Ala Val Ala Pro Leu		
725		

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<220>

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<400> 19

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